

UNIVERSITY OF MACAU
FACULTY OF SCIENCE AND TECHNOLOGY
DEPARTMENT of MATHEMATICS

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**“Immersed boundary method for
simulating fluid interfacial flows”**

by

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Time : 11:00am ~ 12:00pm
Venue : J320

Abstract

In this talk, a numerical method based on immersed boundary formulation is introduced for the simulation of two-dimensional fluid with interfaces. In particular, we consider the effects of insoluble surfactant on the fluid interface. The immersed boundary force comes from the surface tension which is affected by the distribution of surfactant along the interface. By tracking the interface in a Lagrangian manner, a simplified surfactant transport equation is derived. A new symmetric discretization for the surfactant concentration equation is proposed that ensures the surfactant mass conservation numerically. By introducing an artificial tangential velocity to the Lagrangian markers, one can keep those markers uniformly distributed to have better resolution. The effect of surfactant on drop deformation in a shear flow, an axisymmetric drop in an extensional flow, and the moving contact line problems are investigated in detail.

ALL ARE WELCOME!